National Aeronautics and Space Administration

PLEIADES

- 56,320-processor, 110-rack SGI Altix ICE (Intel quad-core Xeon)
- Peak performance of 673.4 trillion floating point operations per second (teraflops); LINPACK rating: 544.3 teraflops
- Currently ranked as one of the fastest systems on the Top500 list of the world's most powerful supercomputers
- One of the most energy-efficient supercomputers in the world, using a total of 2.35 megawatts, or 232 megaflops per watt
- Serving as a major computational augmentation for all NASA mission directorates (aeronautics research, exploration systems, science, and space operations)
- Operational since November 2008
- Features the world's largest InfiniBand interconnect network (more than 20 miles of double data rate cabling)
- Central component of an integrated environment providing users with mass storage, data analysis and visualization, application performance optimization, advanced user services, modeling and simulation, and high-speed networking
- Among the scientific and engineering projects running on Pleiades:
  - Extensive simulations of large computational problems for future space vehicle design
  - Coupled atmosphere-ocean models to assess decadal climate prediction for the Intergovernmental Panel on Climate Change
  - Calculations to evaluate a hypothesis by astrobiologists that many prebiotic chemical reactions were catalyzed by mineral surfaces at hydrothermal vents on the ocean floor during Earth's early history
  - Increasingly detailed models of large-scale dark matter halos and galaxy evolution
  - Computational fluid dynamics simulations of complex aircraft, to improve vehicle performance and reduce environmental impact